



SEQUENCE LISTING

Handfield, Martin  
Brady, Jeannine  
Progulske-Fox, Ann  
Hillman, Jeffrey D.

<120> Microbial Polynucleotides Expressed During Infection of  
a Host

<130> MBHB00-505B

<140>

<141>

<150> 60/147,551

<151> 1999-08-06

<150> PCT/US00/21340

<151> 2000-08-04

<160> 20

<170> PatentIn Ver. 2.1

<210> 1

<211> 849

<212> DNA

<213> Actinobacillus actinomycetemcomitans

<220>

<221> misc\_feature

<222> (566)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (625)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (627)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (636)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (650)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (656)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (661)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (672)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (681)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (720)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (723)  
<223> N stands for any nucleotide.

<400> 1  
gatcgcgtaa acggtgtaac acggaaagca attgtttaat gtcggcaaaa tgcagccctg 60  
tggtcggttc gtccagaata tacagggttt tgcccgtatc ccgtttggag agttccgctg 120  
ccagtttcac ccgtttgcgt tccccgcggg acagggtggt agaggattgc cccaagcgaa 180  
tataagacaa gccacgtca atcagggttt gcaatttacg cgcaatcatt ggaatggcat 240  
cgaaaaactc gcgcgcattc tccaccgtca tgtccagcac ctgatgaatg gttttacctt 300  
tgtagcggat ttccagggtt tcgcgattgt aacgcttgcc tttacattgg tcgcaaggca 360  
cgtacacatc gggcaggaag tgcatttcca ctttgattac gccgtcgccc tggcaggctt 420  
acagcgcccg ccgcgcacgt taaaactgaa acgccccggg ttataaccgc gcgcacgggc 480  
tttcggtacg ccggcaaaca attcgcgaat cggcgtgaat acgcccgtgt aagttgcccg 540  
gttgagcgt ggcggtgcgt caatcnggct ttggttaata tcaatacttt atcgaaaaat 600  
tccaaacctt taatggactt gtacngngaa acctcngcat tttctgcaacn attaangcgt 660  
nttgtgcaat anggaacaaa ntgtcgttaa tcagtgtaga atttacctta accggacacn 720  
ccngtgatgc aggtaaataa gccacgggga atgtctaaat tgacgttttt caggttggtt 780  
ccggaagcgc cgaacaattt gagcattttt ttcttatcaa gtgcggtacg ttttttcggt 840  
atttcgatc 849

<210> 2  
<211> 357  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<400> 2  
gatcactaag ttgttcaatc ctttcgcttg ggaatctttg tctaaatacg gtttatgttg 60  
cattgcgtta acgtctaaat cacctttaga cactgcagtg tttggcaagg cgtagtcatg 120  
aataaaacgt attctacgtc taagttgtat ttttcttttg ccactttcgc tgcgatttca 180  
gccacttggg gttccggtcc tgccatcacg cccactttga ttgttgccgg ggcttctgcc 240  
gccggtttgt ctgccggtgc ggcttccggt tttttctctt cattacaagc ccgttaaggc 300

gaatacggag gctaattgttg cgacgcctaa taattttttt caagttcata aaagatc 357

<210> 3  
<211> 886  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<220>  
<221> misc\_feature  
<222> (554)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (596)  
<223> N stands for any nucleotide.

<400> 3  
gatcaaactg gtggcgcaag ggcagcgcggt agcaaattta cccgatattt tgggtctatgc 60  
gcgcgctcggc aacggcatgg tagggcgacg ccgtggttta aaccaagcca aagcggaatg 120  
gcgcttattt aagctaaaac accatcttgg cattcagga tttttatccg ggctattcac 180  
ttttgtcctg cgttccggtg ccagattatt gccgacatca ttactgaaaa acatctatca 240  
aaccttttta agaaaataac atgatgaaat taaactgtat tttaaaaata tccggaattt 300  
ccaccgcact ttttctagcg ggttggttctt caaattcaag tgcgccgacg caatcctctg 360  
agcaggcgaa ttctgttacg gctgtgaatc ccactgcggt gtacagtaag ccccgcaactt 420  
tggataactt caacgattat gtgaatttct taaaaggtaa agcagcggca gaaggcgttt 480  
ctgccgacgt attgaatgca caaaataata ttaattatat tcaaaaatcc gtggattttg 540  
acgatcaaca agcnggcaga attcgcaagc gtgatccaaa tgccccgccg atcatnaatt 600  
ccgaacggca cgaccaatta cttaaatcgt gtattaacca agaataaagt agacacggca 660  
gaagcacgtt attgggaaca attgccgcag cttgaaaatg cttcaaagaa attcagcgta 720  
ccgaaaaatt atctgttagc cttgtggggc atggagagta gctttggcta ttatcagggc 780  
aattacgatg tgttatccac cttagccact cttgcttttg acggacgccg tgaagcctta 840  
ttcagcaaag aattcatcgc cgccatgaaa atgctacagc gcgatc 886

<210> 4  
<211> 507  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<220>  
<221> misc\_feature  
<222> (4)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (9)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (21)  
<223> N stands for any nucleotide.

<220>

<221> misc\_feature  
<222> (23)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (29)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (32)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (35)..(36)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (39)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (42)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (45)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (49)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (52)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (58)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (61)..(62)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (65)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (69)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (73)

<223> N stands for any polynucleotide.

<220>

<221> misc\_feature

<222> (97)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (102)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (138)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (457)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (459)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (467)

<223> N stands for any nucleotide.

<400> 4

ttgntaccnt	agccgctgac	nanaactanc	angcnntgna	tnatntcgna	tnattaanat	60
nngcnaggng	cancagctta	cctttgccga	cggttcnctg	tntgaaagcg	ccattcgcaa	120
agtgccggtg	gaggcgngga	aaattcactc	acttggtgcg	gaaggcaatg	atgtgggatt	180
gaaagcccat	catggcgggt	ggataaagcg	ttatTTTTTA	tgtcggcaga	tgcccttccct	240
gogttaaatg	cgttattaga	cgaaaatttt	tcgtatcagg	acacagcagt	ttacggcgag	300
aattttgtgg	tttccgcgct	gaatgaagat	tccgtgtgtg	tgggcgatat	ttatcaaatc	360
ggctcctgcg	tggtggaggt	gtcgcagccg	cgtaaaccctt	gtgagcgctt	atcgaaaaat	420
accaataatc	cgaacacgca	acaaaccgtg	tacgctncng	ctggtcnggc	tggtatgtgc	480
cggtggtacc	ccaaggggga	aattcaa				507

<210> 5

<211> 1087

<212> DNA

<213> Actinobacillus actinomycetemcomitans

<220>

<221> misc\_feature

<222> (622)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (642)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (661)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (669)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (685)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (690)

<223> N stands for any nucleotide.

<220>

<221> misc\_feature

<222> (700)

<223> N stands for any nucleotide.

<400> 5

```
gatcgcaaca agcgcagttt ctatatattcc gccgcccgcga gtgagatttt caattttaatc 60
gttgccaaac gtattgaact cagtctggcg cagcaggtct taaatggaga cgttttgcaa 120
ctgaacggtt cgcacagttg gtttgtggcg gacgcatcgg aagatttgac gcaactgcaa 180
caacgcttgg cacaacggga tattttgctt accgcaccgc ttatcggcga agaggacaaa 240
agtgcggttg attttgagaa tgaaattttt gtcgcgcacc aagccttggt ccatttgatg 300
cggcaagaac gcgtgaaagc cgcccgcgct ccgattttta tgccggcgca acagtttcaa 360
tggaattttg aaccgaacgg tttgcgcctt aaattttatt tgccggcgagg cagttacgcc 420
acggcggttg tacgcgagct ggtgaatggt gaaaactgaa aaacgagaag aaaaacagga 480
ataacaagaa catgaatatt ttattaaagta acgatgacgg cattcacgcg ccgggcattc 540
gtgtgatggc agaacattgc gtaagattgc caatgtgacc atcgtcgcgc cggacagcaa 600
ccgcaagcgc cgccttcagt tnccttaacct tgggtgaagcc gntgtattcc gttcatttgg 660
naaagcggng attattgcgt caacngcacn cccggcggan tgctgcata ttgccctgac 720
gggttttctt tccgggcgcga tcgatttggg gatctccggc atcaacgcgg gggcgaacct 780
gggcgatgat gtgctatatt ccggcacggt cgcggcagca tttgaagggc gtcactctgg 840
cttgccgtct attgcggtat cgctcgatgg tcgtcaacat tttgaaacgg cggcgcgcg 900
ggtatgcgat ttggtgccga aattacacgc ccaattatta ggcaaacacg aaattctgaa 960
tattaacgtg cccgatgtgc cttacgaaga actgaaaggc attaaagtgt gccatttggg 1020
ctaccgttct tccgcttctg aagtgattaa acagcaaagc ccgcgtggcg aagacatgta 1080
ttggatc
```

<210> 6  
<211> 681  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<220>  
<221> misc\_feature  
<222> (609)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (614)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (651)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (665)  
<223> N stands for any nucleotide.

<400> 6  
gatctgccgt tggcgaaccc ttacgaaatg ctgatacctcg cgtccatcgt ggaaaaagaa 60  
accggcattg ctgcagaacg cccacaagtg gcgtcgggtat tcattaatcg gttaaaagcc 120  
aaaatgaagc tgcaaaccga tccgaccgtc atttacggca tgggcgacga ctacaacggc 180  
aatattcgca aaaaagattt ggaaacgcca acgccttata acacctatgt gattgacggc 240  
ttgccgccga caccgattgc gatgccgagt gaagaggcgt tacaggcggg ggcacatccg 300  
gcgcaaacgg cgttttatta ttctgtggca gacggcacgg ggggacacaa attcagtcgt 360  
aatttaaacy aacataacaa agcgggtgcag caatatttgc gctggtaccg cgaacaaaac 420  
ggaaaataat atggtaggca aatttattgt cattgaaggc ttggaaggcg caggcaaaaag 480  
caccgctcat caatgcgttg tggatacgtt aaaaacgtta ggtgttgggg aagtcattctc 540  
taccgcgcgag ccggggcgga caccggttgg cggaaaagct acgcatctc attaaacatg 600  
aaaaccaana gccngtgacc cgataaagcg gaattactca tgctgtatgc ngccgcctgc 660  
aatngtggg aaaatgtgat c 681

<210> 7  
<211> 822  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<220>  
<221> misc\_feature  
<222> (532)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (630)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (696)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (710)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (722)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (725)  
<223> N stands for any nucleotide.

<400> 7  
gatcgataaa aatcagcaag gcaaccactc ttaacaagaa ttgccatacc gtccaatata 60  
gtcgccaata ctgaatcgcg tagagcatgg ctaacgcaat catagcgcggt aaagtcggaa 120  
tagcaagccc cgccagttgg ctgtataaca acgcaaaaat gaatccgcac agaatcggaa 180  
atgtcgggct gatgtaacgc gtcggcaagg caaattgcag tagacgcgcc aaggtaaaac 240  
ccagcatcat cgccagtcgg atatgcagcc ctgaaatggc aattaaatgc gccgtatttg 300  
ttttttgata aatttgccaa gtttttttgt ctaagcggaa acgttcgcca aaaccgagtg 360  
ccagcaacaa gccttgctcg ggtaaattct ccgtttgttg taaggcttga ttgagagcgg 420  
tttggcgtaa cgaaaaaacg ttttccaatt tgaccgcact tttaatctct gcccaagcgg 480  
tgatgtgctt gccgaaatac catggctggc ggtcaaaacc gtcaaaattc angcgggaag 540  
aaagcgctcg caagcgtaaa ttgcctgcgt aacgttcgcc cgggggttgac tgggtgcttg 600  
agtttccatt gcgcgtaaat acgttggtcn gggaagattt tcggcgaagt tttggcgccg 660  
aataaccagg gggttggata atgctgctga tgccanaaat ttccttgacn ggtaaatttc 720  
cngngggaac gggttttcgg cggcagattg gcaagattat ccgcctgggt cagtatggaa 780  
attgccgatt ggtggacgta agcggactga atcatcaaga tc 822

<210> 8  
<211> 949  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<220>  
<221> misc\_feature  
<222> (538)  
<223> N stands for any nucleotide.

<400> 8  
gatcagggtt ccgtaaccgc gtaaggcggt acccgcgtaa accactcgac ctgcggcggc 60  
ggcattgact gcttgtctgc gagaaccact gatgtcgatg cctttgttac cgccgtcggc 120  
gttagagaaa ccttgaatca cattgccgtt ggtcggccag cgccatgcca cgttggatac 180  
tgccggtgcy gtgccgctt gggttatcgg ctgattggtt gccggtgcag cagtacctac 240  
gccggcttta atcggggccg taatcgtgcc gtcggaacca tattgtgtgc cgtttgcgcc 300  
cgggggtgtaa gttacggtcg gttcaccacc ttgcgtagcc ggttggtgta ccgtcgggtg 360  
catttgcggt gcagctttcg tttgcaccgt aacggttgtg ccgcgggtca cctttaagggt 420  
ttgtccgacg cttaagctgt aaggttcggg catattattc aacgcgcgca attcctttcac 480  
atccaaacca gaaatgtagg cgataaggaa catggtgtca cctttgcgta cggtatangt 540



```

ttcacotttg tagaaacctt tgttgatttg gctgtaatcc ggtgcgtagg tggtcggggt 600
acctggaatg gtgaaatctt gggatgcctg ttgcggttga attttccccg gcaggttggg 660
tttgcttaac ccggttgtgc tttgcaatgc aaactgttga tacatcggtt gaaaaatcgg 720
ctgcgagta gattgtgcgc cggtcgcctg tagattgttc gactgggcaa tcggaccgtt 780
catcgaagcg ggtacattgc cttgttgat ttgcggttcc catgtgctat tgccgccatc 840
ggttgaaccg tccaccggtt gcatgagtc cggggataag gtaccgtcgg cgttttccac 900
cggtgccggt gtattcgaag tacaggccgc taacacggca atgctgac 949

```

<210> 9

<211> 277

<212> DNA

<213> *Actinobacillus actinomycetemcomitans*

<400> 9

```

agagaaaaaa ccggaagccg caccggcaga caaacccggc gcagaagccc cggcaacaat 60
caaagtgggc gtgatggcag gaccggaaca ccaagtggct gaaatcgag cgaaagtggc 120
aaaagaaaaa tacaacttag acgtagaata cgttttattc atgactacgc cttgccaaac 180
actgcagtgt ctaaagggtga tttagacgtt aacgcaatgc aacataaacc gtatttagac 240
aaagattccc aagcgaaagg attgaacaac ttagtga 277

```

<210> 10

<211> 259

<212> DNA

<213> *Actinobacillus actinomycetemcomitans*

<400> 10

```

gatcaaactg gtggcgcaag ggcagcgcgt agcaaattta cccgatattt tggcttatgc 60
gcgcgtcggc aacggcatgg tagggcgacg ccgtggttta aaccaagcca aagcggaatg 120
gcgcttattt aagctaaaac accatcttgg cattcagga tttttatccg ggctattcac 180
ttttgtcctg cgttcgggtg ccagattatt gccgacatca ttactgaaaa acatctatca 240
aaccttttta agaaaataa 259

```

<210> 11

<211> 459

<212> DNA

<213> *Actinobacillus actinomycetemcomitans*

<400> 11

```

gatcgcaaca agcgcagttt ctatatttcc gccgcccga gtgagatttt caatttaatc 60
gttgccaaac gtattgaact cagtctggcg cagcaggtct taaatggaga cgttttgcaa 120
ctgaacggtt cgcacagttg gtttgtggcg gacgcatcgg aagatttgac gcaactgcaa 180
caacgcttg cacaacggga tttttgtct accgcaccgc ttatcggcga agaggacaaa 240
agtgcggtg attttgagaa tgaaattttt gtcgcgcacc aagccttggt ccatttgatg 300
cggcaagaac gcgtgaaagc cgcccgccgt ccgattttta tgcaggcgca acagtttcaa 360
tggaattttg aaccgaacgg tttgcgcctt aaattttatt tgccggcagg cagttacgcc 420
acggcggttg tacgcgagct ggtgaatggt gaaaactga 459

```

<210> 12

<211> 596

<212> DNA

<213> *Actinobacillus actinomycetemcomitans*

<220>

<221> misc\_feature  
<222> (131)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (151)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (170)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (178)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (194)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (199)  
<223> N stands for any nucleotide.

<220>  
<221> misc\_feature  
<222> (209)  
<223> N stands for any nucleotide.

<400> 12  
atgaatattt tattaagtaa cgatgacggc attcacgcgc cgggcattcg tgtgatggca 60  
gaacattgcg taagattgcc aatgtgacca tcgtcgcgcc ggacagcaac cgcaagcgcc 120  
gccttcagtt ncttaacctt ggtgaagccg ntgtattccg ttcatttggn aaagcggnga 180  
ttattgcgtc aacngcacnc ccggcggant gcgtgcatat tgccctgacg ggttttcttt 240  
ccgggcgcgc cgatttggtg atttcgggca tcaacgcgcg ggcgaaacctg ggcgatgatg 300  
tgctatatcc cggcacgggc gcggcagcat ttgaagggcg tcctctgggc ttgccgtcta 360  
ttgcggtatc gtcgatggg cgtcaacatt ttgaaacggc ggcgcgcgtg gtatgcgatt 420  
tggtgccgaa attacacgcc caattattag gcaaacacga aattctgaat attaactgac 480  
ccgatgtgcc ttacgaagaa ctgaaaggca ttaaagtgtg ccatttgggc taccgttctt 540  
ccgcttctga agtgattaaa cagcaaagcc cgcgtggcga agacatgtat tggatc 596

<210> 13  
<211> 429  
<212> DNA  
<213> Actinobacillus actinomycetemcomitans

<400> 13  
gatctgccgt tggcgaaccc ttacgaaatg ctgatcctcg cgtccatcgt ggaaaaagaa 60  
accggcattg ctgcagaacg cccacaagtg gcgtcgggtat tcattaatcg gttaaaagcc 120  
aaaatgaagc tgcaaaccga tccgaccgtc atttacggca tgggcgacga ctacaacggc 180  
aatattcgca aaaaagattt ggaaacgcca acgccttata acacctatgt gattgacggc 240

ttgccgccga caccgattgc gatgccgagt gaagaggcgt tacaggcggt ggcacatccg 300  
 ggcgaaacgg cgttttatta ttctgtggca gacggcacgg ggggacacaa attcagtcgt 360  
 aatttaaacg aacataacaa agcgggtgcag caatatttgc gctggtaccg cgaacaaaac 420  
 ggaaaataa 429

<210> 14  
 <211> 162  
 <212> DNA  
 <213> Actinobacillus actinomycetemcomitans

<400> 14  
 atggtaggca aatttattgt cattgaaggc ttggaaggcg caggcaaaag caccgctcat 60  
 caatgcgttg tggatacggt aaaaacgtta ggtgttgggg aagtcattctc taccgcgag 120  
 ccgggcggca caccggttg cggaagct acgccattctc at 162

<210> 15  
 <211> 67  
 <212> PRT  
 <213> Actinobacillus actinomycetemcomitans

<400> 15  
 Glu Lys Lys Pro Glu Ala Ala Pro Ala Asp Lys Pro Ala Ala Glu Ala  
 1 5 10 15  
 Pro Ala Thr Ile Lys Val Gly Val Met Ala Gly Pro Glu His Gln Val  
 20 25 30  
 Ala Glu Ile Ala Ala Lys Val Ala Lys Glu Lys Tyr Asn Leu Asp Val  
 35 40 45  
 Glu Tyr Val Leu Phe Met Thr Thr Pro Cys Gln Thr Leu Gln Cys Leu  
 50 55 60  
 Lys Val Ile  
 65

<210> 16  
 <211> 85  
 <212> PRT  
 <213> Actinobacillus actinomycetemcomitans

<400> 16  
 Ile Lys Leu Val Ala Gln Gly Gln Arg Val Ala Asn Leu Pro Asp Ile  
 1 5 10 15  
 Leu Val Tyr Ala Arg Val Gly Asn Gly Met Val Gly Arg Arg Arg Gly  
 20 25 30  
 Leu Asn Gln Ala Lys Ala Glu Trp Arg Leu Phe Lys Leu Lys His His  
 35 40 45  
 Leu Gly Ile Gln Gly Phe Leu Ser Gly Leu Phe Thr Phe Val Leu Arg  
 50 55 60

Ser Gly Ala Arg Leu Leu Pro Thr Ser Leu Leu Lys Asn Ile Tyr Gln  
65 70 75 80

Thr Phe Leu Arg Lys  
85

<210> 17

<211> 152

<212> PRT

<213> Actinobacillus actinomycetemcomitans

<400> 17

Asp Arg Asn Lys Arg Ser Phe Tyr Ile Ser Ala Ala Arg Ser Glu Ile  
1 5 10 15

Phe Asn Leu Ile Val Ala Lys Arg Ile Glu Leu Ser Leu Ala Gln Gln  
20 25 30

Val Leu Asn Gly Asp Val Leu Gln Leu Asn Gly Ser His Ser Trp Phe  
35 40 45

Val Ala Asp Ala Ser Glu Asp Leu Thr Gln Leu Gln Gln Arg Leu Ala  
50 55 60

Gln Arg Asp Ile Leu Leu Thr Ala Pro Leu Ile Gly Glu Glu Asp Lys  
65 70 75 80

Ser Ala Val Asp Phe Glu Asn Glu Ile Phe Val Ala His Gln Ala Leu  
85 90 95

Phe His Leu Met Arg Gln Glu Arg Val Lys Ala Ala Arg Arg Pro Ile  
100 105 110

Leu Met Gln Ala Gln Gln Phe Gln Trp Gln Phe Glu Pro Asn Gly Leu  
115 120 125

Arg Leu Lys Phe Tyr Leu Pro Ala Gly Ser Tyr Ala Thr Ala Leu Val  
130 135 140

Arg Glu Leu Val Asn Val Glu Asn  
145 150

<210> 18

<211> 198

<212> PRT

<213> Actinobacillus actinomycetemcomitans

<220>

<221> UNSURE

<222> (43)

<223> Xaa stands for any amino acid.

<220>

<221> UNSURE

<222> (50)

<223> Xaa stands for any amino acid.

<220>

<221> UNSURE

<222> (59)

<223> Xaa stands for any amino acid.

<220>

<221> UNSURE

<222> (66)

<223> Xaa stands for any amino acid.

<220>

<221> UNSURE

<222> (69)

<223> Xaa stands for any amino acid.

<400> 18

Met	Asn	Ile	Leu	Leu	Ser	Asn	Asp	Asp	Gly	Ile	His	Ala	Pro	Gly	Ile
1				5					10					15	

Arg	Val	Met	Arg	Thr	Leu	Arg	Lys	Ile	Ala	Asn	Val	Thr	Ile	Val	Ala
			20					25					30		

Pro	Asp	Ser	Asn	Arg	Lys	Arg	Arg	Leu	Gln	Xaa	Leu	Asn	Leu	Gly	Glu
		35					40					45			

Ala	Xaa	Val	Phe	Arg	Ser	Phe	Gly	Lys	Ala	Xaa	Ile	Ile	Ala	Ser	Thr
	50					55					60				

Ala	Xaa	Pro	Ala	Xaa	Cys	Val	His	Ile	Ala	Leu	Thr	Gly	Phe	Leu	Ser
65					70					75					80

Gly	Arg	Ile	Asp	Leu	Val	Ile	Ser	Gly	Ile	Asn	Ala	Gly	Ala	Asn	Leu
				85					90					95	

Gly	Asp	Asp	Val	Leu	Tyr	Ser	Gly	Thr	Val	Ala	Ala	Ala	Phe	Glu	Gly
			100					105					110		

Arg	His	Leu	Gly	Leu	Pro	Ser	Ile	Ala	Val	Ser	Leu	Asp	Gly	Arg	Gln
		115					120					125			

His	Phe	Glu	Thr	Ala	Ala	Arg	Val	Val	Cys	Asp	Leu	Val	Pro	Lys	Leu
	130					135					140				

His	Ala	Gln	Leu	Leu	Gly	Lys	His	Glu	Ile	Leu	Asn	Ile	Asn	Val	Pro
145					150					155					160

Asp	Val	Pro	Tyr	Glu	Glu	Leu	Lys	Gly	Ile	Lys	Val	Cys	His	Leu	Gly
				165					170					175	

Tyr	Arg	Ser	Ser	Ala	Ser	Glu	Val	Ile	Lys	Gln	Gln	Ser	Pro	Arg	Gly
			180					185					190		

Glu	Asp	Met	Tyr	Trp	Ile
		195			

<210> 19  
<211> 142  
<212> PRT  
<213> Actinobacillus actinomycetemcomitans

<400> 19

Asp Leu Pro Leu Ala Asn Pro Tyr Glu Met Leu Ile Leu Ala Ser Ile  
1 5 10 15  
Val Glu Lys Glu Thr Gly Ile Ala Ala Glu Arg Pro Gln Val Ala Ser  
20 25 30  
Val Phe Ile Asn Arg Leu Lys Ala Lys Met Lys Leu Gln Thr Asp Pro  
35 40 45  
Thr Val Ile Tyr Gly Met Gly Asp Asp Tyr Asn Gly Asn Ile Arg Lys  
50 55 60  
Lys Asp Leu Glu Thr Pro Thr Pro Tyr Asn Thr Tyr Val Ile Asp Gly  
65 70 75 80  
Leu Pro Pro Thr Pro Ile Ala Met Pro Ser Glu Glu Ala Leu Gln Ala  
85 90 95  
Val Ala His Pro Ala Gln Thr Ala Phe Tyr Tyr Phe Val Ala Asp Gly  
100 105 110  
Thr Gly Gly His Lys Phe Ser Arg Asn Leu Asn Glu His Asn Lys Ala  
115 120 125  
Val Gln Gln Tyr Leu Arg Trp Tyr Arg Glu Gln Asn Gly Lys  
130 135 140

<210> 20  
<211> 54  
<212> PRT  
<213> Actinobacillus actinomycetemcomitans

<400> 20

Met Val Gly Lys Phe Ile Val Ile Glu Gly Leu Glu Gly Ala Gly Lys  
1 5 10 15  
Ser Thr Ala His Gln Cys Val Val Asp Thr Leu Lys Thr Leu Gly Val  
20 25 30  
Gly Glu Val Ile Ser Thr Arg Glu Pro Gly Gly Thr Pro Val Gly Gly  
35 40 45  
Lys Ala Thr Pro Ser His  
50